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ABSTRACT

Since 1994, the National Science Foundation has funded Rural Systemic Initiatives (RSI), a set of systemic reforms to enhance math, science, and technology education in economically disadvantaged, rural areas through instructional and policy reform and community development activities. As part of an evaluation of the program, surveys were sent to each school district in the Delta RSI; the Appalachian RSI; and the UCAN RSI, which consisted of Utah, Colorado, Arizona, and Nevada. Findings indicate that elementary schools had the highest level of participation in RSIs. RSIs employed one of two different strategies: provision of a very broad menu of services to everyone, or provision of core services to everyone and supplementation with other services in certain schools. Professional development was listed as the most effective RSI activity. Curriculum-related activities were also reported to be among the most effective RSI activities. Factors that facilitated education reform were administrative support and state education standards. Barriers to reform were lack of money and lab equipment and low expectations for students. RSI participation most influenced math assessment alignment with standards; emphasis on strengthening science, math, and technology; and curriculum implementation. RSI least influenced teacher-student ratios, minority test scores, and the percentage of students taking advanced placement courses. Some of the most effective benefits provided by RSI were equipment/materials, consultants, and funding. Activities that led to school staff going beyond the confines of their buildings were beneficial because they led to increased communication with the community and other schools. (Contains 24 data tables.) (TD)

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RSI SURVEY REPORT

Prepared

for

The NSF Rural Systemic Initiatives Evaluation Study

by

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Rural Systemic Initiatives Survey

In 1994, funding of Rural Systemic Initiatives (RSI), the third in a set of systemic reform initiatives sponsored by the National Science Foundation (NSF), was offered on a competitive basis. The RSIs were created to enhance math, science, and technology education for all students and focus on economically disadvantaged, rural areas through instructional and policy reform and community development activities. RSIs are expected to address policy, leadership, and work force issues related to educational barriers by engaging community involvement in creating a comprehensive and sustainable system of math, science, and technology education that reflects current advancements in these areas. Instruction and performance standards are expected to play a major role for districts involved in these programs.

In August 1998, NSF contracted with The Evaluation Center to evaluate the RSI program. In part, the study was designed to investigate the relationship among the potentially conflicting values in traditional rural communities with the current understanding of education reform and the goals of NSF-sponsored Rural Systemic Initiatives, including the six drivers of educational system reform. More importantly, the Center focused on the impact of these relationships on student learning in science and mathematics within selected RSI projects. The RSIs to be included in the study were the Delta RSI (Mississippi, Arkansas, and Louisiana), the Appalachian RSI (Ohio, West Virginia, Virginia, Kentucky, Tennessee, North Carolina) and the UCAN RSI (Utah, Colorado, Arizona, and Nevada).

In order to achieve its objectives, a mixed method approach was used for the study. Using the *User-Friendly Handbook for Mixed Method Evaluations* distributed by NSF as a basic set of guidelines, broad-based sets of sets of quantitative and qualitative data were be collected and analyzed. One of the data sets was from a survey of stakeholders in school districts participating in RSIs being studied by The Evaluation Center. The purpose of the survey was to help evaluators identify local conditions that might influence the extent to which the "drivers of educational reform" had been implemented in the district.

In April 2000, a paper and pencil questionnaire was sent to a matrix sample of stakeholders (the designated contact persons for each school district participating in the RSIs). The first five pages of the questionnaire were identical. However, on the last page, each stakeholder received one of three different subsets of questions. After about a month, a second questionnaire was sent to nonrespondents. The final response rates for the RSIs being studied were Delta=31 percent; UCAN=33 percent; ARSI=51 percent. Data were analyzed using quantitative and qualitative methods. The findings from the survey are found below as summarized data and an interpretation of the response for each question.

Question 1—Circle the RSI in which your district participated

Even though ARSI had the highest response rate (51 percent), the respondents from UCAN schools make up the greatest percentage of the total responses (38.8 percent). Delta had the lowest response rate (31 percent) and the lowest percentage of total responses (26.9 percent).

Table 1. Frequency and Percentage of Respondents to the Survey

RSI	Frequency	Percent
Delta	18	26.9%
UCAN	26	38.8%
ARSI	23	34.3%
Total	67	100%

Question 2—List the names and levels of schools in your district that have participated in some substantial way with this RSI.

Elementary school participation in the RSIs was higher than high school participation, while middle school/junior high participation varied. In all three RSIs, twice as many elementary schools as high schools were reported to have substantial involvement with the RSI (see Table 2). Involvement at the middle school/junior high level was similar to the high school level for ARSI, similar to the elementary level for Delta, and intermediate for UCAN.

Table 2. Number of Participating Schools in Each RSI at Three Educational Levels

	Number of Participating Schools		
RSI	Elementary	Middle/Jr High	High School
Delta	35	32	18
UCAN	46	25	17
ARSI	52	19	23
Total	133	76	58

These differences in the number of schools involved at each level could be due to the fact that districts frequently have more elementary schools than middle schools/junior highs and more middle level schools than high schools. However, in each RSI a higher percentage of districts

reported participation at the elementary level than at the high school level (see Table 3). Middle school participation varied in relation to the lower and upper levels among the three projects.

Table 3. Percentage of Districts in Each RSI Reporting Participation at Three Educational Levels

	Percentage of Districts		
RSI	Elementary	Middle/Jr High	High School
Delta	72%	94%	61%
UCAN	81%	77%	65%
ARSI	74%	61%	70%
Total	76%	77%	65%

Assignment of schools to grade levels – Some respondents listed grade levels for each school while others only listed elementary, middle school/junior high, or high school. Schools with word designations were assigned to those categories. Schools with grade level information were assigned to each of the three categories based on the major focus of the school. "Elementary" includes schools with grade ranges of prekindergarten or kindergarten through grades 5, 6, or 7. "Middle School/Junior High" includes schools with grade ranges of 5, 6, or 7 through grades 8 or 9. "High School" includes grades 9 or 10 though 12. Schools that serve grades K–8 were counted as both elementary and middle school; schools serving grades 7–12 were counted as both middle school and high school.

Question 3—School district information

The data in Table 4 reveal that there is a substantial amount of variation on key characteristics among rural districts participating in RSI. The standard deviations for many of the district characteristics are very high—in some cases as high as the mean. This finding shows that there is no such thing as a "typical" rural district.

Table 4. District Characteristics

	Delta		UCAN		ARSI		Total	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total schools in district	6	4	4	3	9	5	6	4
Number of teachers	177	107	73	74	264	143	168	137

	Delta		UCAN		ARSI		Total	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Number of students	2772	1491	1052	1146	3490	1904	2391	1859
Percent free lunch	75.62	13.63	79.04	19.57	63.48	13.4	72.59	17.24
Percent minority	64.66	26.62	70.44	31.99	2.49	4.66	45.75	39.41
Percent high school graduate	74.04	21.92	83.55	19.91	84.65	11.16	81.2	18.2
Percent of grads attending college	39.56	12.71	42.78	24.31	46.67	14.26	43.26	17.94
Percent postsecondary education	16.29	6.73	18.38	15.95	26.52	24.95	20.95	18.67
Annual per-pupil expenditure	4904	2067	4075	1904	5147	1619	4706	1882
District's geographic size (sq. mi.)	449	228	3714	12353	393	138	1518	7155
Population of largest town in area	4933	4922	6365	15966	3764	3513	5048	10078
Distance from city of 100,000+	85	40	125	93	102	55	106	70
Yrs. of involvement with RSI	2.61	1.24	4.38	1.88	3.17	1.15	3.46	1.64

Question 4—Which of the following RSI activities or services has your school district participated in or received over the past 5 years? (Check all that apply)

Examination of the data in Table 5 suggests two different strategies employed by RSIs for providing services to school districts. ARSI apparently tried to provide a very broad menu of services to everyone. UCAN and Delta appear to provide core services, such as group/individual professional development and on-site consultation, to everyone and supplement with other services, perhaps tailored to the needs of individual districts.

Table 5. RSI Activities or Services Over Past Five Years

	Delta	UCAN	ARSI	Total

	Freq	%*	Freq	%*	Freq	%*	Freq	%*
Group professional development	16	88.9	26	100	22	95.7	64	95.5
Individual professional develop.	10	55.6	19	73.1	21	91.3	50	74.6
On-site consultation	15	83.3	22	84.6	22	95.7	59	88.1
Needs assessment	9	50.0	18	69.2	21	91.3	48	71.6
Curriculum audit	5	27.8	17	65.4	17	73.9	39	58.2
Align curriculum w/ standards	8	44.4	21	80.8	18	78.3	47	70.1
Develop curriculum	4	22.2	16	61.5	16	69.6	36	53.7
Materials selection	6	33.3	15	57.7	19	82.6	40	59.7
Instructional skills	9	50.0	17	65.4	20	87.0	46	68.7
Student assessments	10	55.6	15	57.7	14	60.9	39	58.2
Provide materials	7	38.9	14	53.8	17	73.9	38	56.7
Community involvement	9	50.0	9	34.6	17	73.9	35	52.2
Proposal development	4	22.2	8	30.8	14	60.9	26	38.8
Other	2	11.1	2	7.7	1	4.3	5	7.5
Other	1	5.6	.	.	.	.	1	1.5

Note: * indicates percent of cases.

Question 5—Briefly describe any particularly effective or exemplary RSI-sponsored or RSI-initiated activities that have taken place in your school district.

The most effective RSI activities reported by districts focused on professional development for teachers, curriculum changes, increased resources, and increased communication and involvement (see Table 6).

Table 6. Most Effective or Exemplary RSI-Sponsored or RSI-Initiated Activities

	Number of Districts			Percentage of Districts			
Activity	Delta	UCAN	ARSI	Delta	UCAN	ARSI	Overall
Professional development	12	18	15	67%	69%	65%	67%
Curriculum activities	6	10	11	33%	39%	48%	40%
Resources	5	5	7	28%	19%	30%	24%
Communication/network	5	4	6	28%	8%	26%	22%

Professional development was listed most frequently as a particularly effective or exemplary RSI-sponsored activity, with 67 percent of the districts reporting one or more items in this category (see Tables 6 and 7). The Teacher Partner program received high praise from 39 percent of the districts in ARSI. These teachers not only participated in regular professional development meetings themselves, but also trained other teachers in their schools. Several ARSI districts also mentioned professional development focused on inquiry. Districts in UCAN reported professional development activities focused on interpretation of standards, aligning curriculum with standards, assessment, instructional skills and techniques, training to use new curriculum, and leadership development as most effective. One third of the Delta respondents listed training to use new curriculum as the most effective RSI activity. Several respondents also mentioned training in instructional skills and techniques and training for administrators. More than 25 percent of the respondents in UCAN and ARSI, as well as several Delta districts, listed professional development for teachers, with no topics specified, as the most effective RSI-sponsored activity. While most professional development was directed toward teachers, activities also were provided for administrators, counselors, and leadership teams.

Table 7. Professional Development Activities Listed as Effective by Two or More Respondents

	Number of Districts			Percentage of Districts		
Professional Development Activity	Delta	UCAN	ARSI	Delta	UCAN	ARSI
Interpretation of standards	1	5	0	6%	19%	0%
Aligning curriculum with standards	1	4	2	6%	15%	9%
Training to use new curriculum	6	3	0	33%	12%	0%
Instructional skills and techniques	2	3	2	11%	12%	9%
Inquiry	0	0	4	0%	0%	17%

	Number of Districts			Percentage of Districts		
Professional Development Activity	Delta	UCAN	ARSI	Delta	UCAN	ARSI
Assessment	0	4	0	0%	15%	0%
Training for new Gateway tests	0	0	2	0%	0%	9%
Training to use new equipment	1	0	2	6%	0%	9%
Teacher Partner program	1	0	9	6%	0%	39%
Professional development (no topic identified)	2	7	6	11%	27%	26%
Leadership development	0	4	1	0%	15%	9%
Administration training	2	0	1	11%	0%	9%

RSI activities related to curriculum changes were also listed as particularly effective by many districts (see Tables 6 and 8). Several districts in Delta and UCAN listed assistance aligning their curriculum with standards and with selecting, developing, and implementing new curriculum materials as helpful RSI activities. Almost a third of ARSI districts reported assistance with curriculum audits as particularly useful.

Table 8. Curriculum-Related Activities Listed as Effective by Two or More Respondents

	Number of Districts			Percentage of Districts		
Activity	Delta	UCAN	ARSI	Delta	UCAN	ARSI
Curriculum alignment with standards	3	6	2	17%	23%	9%
Curriculum audit	0	2	7	0%	8%	30%
Needs assessment/program review	1	0	1	6%	0%	4%
Develop action plan	1	2	1	6%	8%	4%
Assistance with selection, development, and implementation of curriculum materials	2	4	2	11%	15%	9%

Increased resources (both external funding and the things that external funding can buy) was a third type of RSI activity that respondents felt was particularly effective (see Tables 6 and 9). Districts in all three RSIs reported increased funding (unspecified) as helpful. Several Delta districts also listed assistance from consultants and specialists. ARSI districts mentioned

receiving new equipment and associated training for teachers.

Table 9. Resources Listed as Effective by Two or More Respondents

	Number of Districts			Percentage of Districts		
Resource	Delta	UCAN	ARSI	Delta	UCAN	ARSI
Funding	4	3	1	22%	12%	4%
Grant-writing assistance and info	0	0	2	0%	0%	9%
Consultants and specialists	3	0	2	17%	0%	9%
Equipment	0	0	3	0%	0%	13%
Resources (video, etc.)	0	2	1	0%	8%	4%

RSI-sponsored activities that led to increased communication and involvement were also listed as particularly effective (see Tables 6 and 10). Districts in Delta and ARSI were enthusiastic about the increase in parental and community involvement, particularly as a result of Family Math and Science nights. Several UCAN districts developed increased communication with Native American tribes and with other districts serving Indian students. As a result of this effort, three tribes and four districts formed the UTE Nations Education Coalition, which is applying for 501(c)(3) status.

Table 10. Increased Communication and Community Involvement as a Result of RSI Activities

	Number of Districts			Percentage of Districts		
Activity	Delta	UCAN	ARSI	Delta	UCAN	ARSI
Parental/community involvement	5	0	5	28%	0%	22%
Communication with tribes and districts	0	3	0	0%	12%	0%
Networking among teachers	0	1	1	0%	4%	9%

Overall, the respondents reported professional development for teachers as the most effective RSI-sponsored activity. Other effective activities varied among the three programs. Delta districts found professional development for teachers (67 percent), particularly training to use new curriculum (33 percent), most useful as well as increased parental and community involvement (28 percent) and increased funding (22 percent). UCAN respondents listed professional development for teachers (69 percent) and assistance aligning curriculum with

standards (23 percent) as most helpful. ARSI districts found professional development for teachers (70 percent), particularly the Teacher Partner program (39 percent), most useful, as well as curriculum audits (30 percent) and increased parental and community involvement (22 percent).

Question 6—What is the greatest benefit your school district has gained from involvement with the RSI?

The greatest benefits reported by districts focused on professional development for teachers, increased resources, curriculum changes, and increased communication and networking (see Table 11).

Table 11. Greatest Benefit to School District From RSI Involvement

	Number of Districts			Percentage of Districts			
Benefit	Delta	UCAN	ARSI	Delta	UCAN	ARSI	Overall
Professional development	10	13	11	56%	50%	48%	51%
Resources	7	9	12	39%	35%	52%	42%
Curriculum changes	2	12	7	11%	46%	30%	31%
Increased involvement	3	9	6	17%	35%	26%	27%

Professional development was listed by 51 percent of the districts as the greatest benefit they derived from RSI involvement (see Tables 11 and 12). While most of the professional development options listed on the survey were directed toward teachers, several districts also listed professional development for administrators and leadership training as benefits.

Table 12. Targets of Professional Development Activities

	Number of Districts			Percentage of Districts		
Professional development targets	Delta	UCAN	ARSI	Delta	UCAN	ARSI
Teachers	8	12	11	44%	45%	48%
Leadership training	0	2	1	0%	8%	4%
Administrators	2	1	0	11%	4%	0%

Increased resources were listed by 42 percent of the respondents as a benefit of RSI involvement (see Tables 11 and 13). In addition to unspecified resources, these resources included

information, funding, consultants and contact with experts, as well as equipment, kits, and science/math materials.

Table 13. Resources Listed as a Benefit of RSI Involvement

	Number of Districts			Percentage of Districts		
Type of resource	Delta	UCAN	ARSI	Delta	UCAN	ARSI
Information	1	4	4	17%	15%	17%
Funding	4	4	0	22%	15%	6%
Equipment/kits/materials	1	2	4	6%	8%	17%
Consultants and contact with experts	3	1	2	17%	4%	9%
Unspecified	0	3	5	0%	15%	22%

Curriculum changes were listed as a benefit of RSI involvement by 31 percent of the districts (see Tables 11 and 14). These changes included curriculum review and alignment with standards, curriculum selection and implementation, increased use of standards, and the development of a standards-based curriculum.

Table 14. Curriculum Changes Listed as a Benefit of RSI Involvement

	Number of Districts			Percentage of Districts		
Curriculum Change	Delta	UCAN	ARSI	Delta	UCAN	ARSI
Alignment with standards	1	7	5	6%	27%	22%
Use of standards	0	1	3	0%	4%	13%
Standards-based curriculum	0	2	1	0%	8%	4%
Selection and implementation	1	5	0	6%	19%	0%

For 27 percent of the respondents, RSI involvement led to increased involvement with others outside the school (see Tables 11 and 15). This included increased communication and networking with colleagues, increased communication with community groups such as tribes, and increased family involvement.

Table 15. Increased Involvement with Others Outside the School as a Benefit of RSI Involvement

	Number of Districts			Percentage of Districts		
Type of Involvement	Delta	UCAN	ARSI	Delta	UCAN	ARSI
Communication	0	4	1	0%	15%	6%
Networking and collaboration	2	5	3	11%	19%	13%
Family involvement	1	0	2	6%	0%	9%

In addition to the benefits of RSI involvement listed by respondents in all three RSIs, several benefits were listed primarily by districts in ARSI. These included an increased focus on science and math and an increased motivation to pursue a standards-based curriculum (30 percent), improved instruction (26 percent), and the Teacher Partners (22 percent).

Question 7—What factors have facilitated or been a barrier to education reform in your school district? (Check all that apply).

Table 16 contains data on facilitating factors. The most important factor that was found to facilitate education reform across all three RSIs was administrative support from school boards, district administration, and school principals. Another factor that was found to facilitate education reform was state education standards.

Table 16. Factors that Facilitated Education Reform

	Delta		UCAN		ARSI		Total	
	Freq.	%*	Freq.	%*	Freq.	%*	Freq.	%*
District administration	17	94.4	20	76.9	22	95.7	59	88.1
School principals	16	88.9	23	88.5	20	87.0	59	88.1
Personnel changes	7	38.9	6	23.1	8	34.8	21	31.3
Teacher preparation	10	55.6	12	46.2	10	43.5	32	47.8
Teacher subject knowledge	9	50.0	15	57.7	8	34.8	32	47.8

	Delta		UCAN		ARSI		Total	
	Freq.	%*	Freq.	%*	Freq.	%*	Freq.	%*
Teacher turnover	2	11.1	2	7.7	4	17.4	8	11.9
Facilities	8	44.4	5	19.2	9	39.1	22	32.8
Money	4	22.2	5	19.2	4	17.4	13	19.4
Lab equipment	3	16.7	10	38.5	4	17.4	17	25.4
Science materials	7	38.9	12	46.2	4	17.4	23	34.3
Math materials	12	66.7	14	53.8	10	43.5	36	53.7
Computers available	12	66.7	12	46.2	16	69.6	40	59.7
Technology available	10	55.6	8	30.8	12	52.2	30	44.8
Educational materials	11	61.1	12	46.2	12	52.2	35	52.2
District projects	10	55.6	9	34.6	16	69.6	35	52.2
State standards	14	77.8	22	84.6	20	87.0	56	83.6
School board	15	83.3	15	57.7	19	82.6	49	73.1
Parental involvement	8	44.4	8	30.8	8	34.8	24	35.8
Community involvement	7	38.9	8	30.8	9	39.1	24	35.8
Expectations for students	8	44.4	8	30.8	8	34.8	24	35.8
Community support	7	38.9	7	26.9	6	26.1	20	29.9
Court decisions	2	11.1	3	11.5	3	13.0	8	11.9
School consolidation	2	11.1	2	7.7	3	13.0	7	10.4
Other	1	5.6	.	.	.	.	1	1.5

Note: * indicates percent of cases

Table 17 contains data on barriers to education reform. The factors that were found to be barriers to education reform were money and lab equipment. The barriers were of lower magnitude than the facilitating factors. For example, in Table 17, the highest frequency was 45 (68.2 percent). In Table 16, the highest frequency was 59 (88.1 percent). School consolidations and school boards were not seen as barriers to education reform.

Table 17. Factors That Were a Barrier to Education Reform

	Delta		UCAN		ARSI		Total	
	Freq.	%*	Freq.	%*	Freq.	%*	Freq.	%*
District administration	1	5.6	5	19.2	1	4.5	7	10.6
School principals	2	11.1	3	11.5	5	22.7	10	15.2
Personnel changes	7	38.9	12	46.2	7	31.8	26	39.4
Teacher preparation	7	38.9	13	50.0	5	22.7	25	37.9
Teacher subject knowledge	6	33.3	9	34.6	8	36.4	23	34.8
Teacher turnover	14	77.8	8	30.8	10	45.5	32	48.5
Facilities	6	33.3	9	34.6	7	31.8	22	33.3
Money	14	77.8	17	65.4	14	63.6	45	68.2
Lab equipment	14	77.8	10	38.5	19	86.4	43	65.2
Science materials	9	50.0	12	46.2	16	72.7	37	56.1
Math materials	5	27.8	8	30.8	11	50.0	24	36.4
Computers available	5	27.8	8	30.8	5	22.7	18	27.3
Technology available	6	33.3	9	34.6	8	36.4	23	34.8
Educational materials	4	22.2	4	15.4	3	13.6	11	16.7
District projects	2	11.1	6	23.1	2	9.1	10	15.2
State standards	2	11.1	1	3.8	.	.	3	4.5
School board	.	.	2	7.7	1	4.5	3	4.5
Parental involvement	8	44.4	7	26.9	9	40.9	24	36.4
Community involvement	8	44.4	8	30.8	6	27.3	22	33.3
Expectations for students	9	50.0	7	26.9	11	50.0	27	40.9

	Delta		UCAN		ARSI		Total	
	Freq.	%*	Freq.	%*	Freq.	%*	Freq.	%*
Community support	11	61.1	9	34.6	9	40.9	29	43.9
Court decisions	.	.	3	11.5	5	22.7	8	12.1
School consolidation	1	5.6	.	.	1	4.5	2	3.0
Other 1	2	11.1	2	7.7	2	9.1	6	9.1
Other 2	.	.	2	7.7	2	9.1	4	6.1

Note: * indicates percent of cases

Examination of Tables 16 and 17, together, enables one to detect differences among the RSIs. Leadership, teachers, standards, materials, computers/technology, and district projects facilitated education reform for Delta. The challenge Delta faces is teacher turnover, lab equipment, money, expectations for students, and community support. Leadership, teachers, standards, and materials facilitated education reform for UCAN. The challenge UCAN faces is teacher preparation and money. Leadership, standards, computer availability and district projects facilitated education reform for ARSI. The challenges ARSI faces are money, lab equipment, materials, and expectations for students.

Question 8—What effect has participation in the RSI (UCAN, ARSI, or Delta) had in your school district on the following indicators related to the "drivers of educational reform?"

On question 8, each respondent received one of three different subsets of items. The scale of the Likert-like items was 1= unaffected; 2=somewhat increased; 3 positively increased; and 4=greatly increased. The aggregated descriptive statistics are found in Table 18. Respondents said RSI participation most influenced math assessment alignment with standards (mean=3.58); changing of math activities to improve curriculum (3.52); and lowest ability students' achievements in science and math (3.50). RSI least influenced the percentage of students taking Advanced Placement college examinations (mean=1.67); low income parents' support of their children's learning in science and math (1.80); and minority students' scores on science and math standardized tests (1.85). Because of the matrix sampling, the Ns for each item were lower than they would have been otherwise. Also, when variables are considered on a listwise basis, there are none available for analysis. This precluded the use of more advanced statistical analysis.

Table 18. Result of RSI Participation

Indicators	N	Mean	SD
Secondary math curriculum alignment with the National Council	16	2.50	.89

Indicators	N	Mean	SD
of Teachers of Mathematics standards			
Teaching of science relevant to our locale	16	2.44	.96
Teachers' abilities to articulate instructional standards	16	2.69	.87
Teachers' and staff's participation in professional development programs	16	3.00	.97
Policies for providing a coherent vision that encompasses all students	16	2.50	.97
Teacher training in the use of assessment	16	2.87	.81
Acquisition of additional funds to support science and math education	16	2.63	.89
Facilities for providing access to learning technologies	15	2.47	1.19
Low income parents' support of their children's learning in science and math	15	1.80	.56
Relevant stakeholders' understanding and acceptance of systematic change as a strategy for improving education	16	2.44	.96
Number of middle school/jr. high students engaged in challenging, high quality science and math learning experiences	16	2.88	1.82
High school students' interest in math and science	16	2.13	.72
Use of valid and reliable student performance measures	16	2.56	.81
Percentage of historically underserved students showing success in math and science courses	16	2.50	1.79
Lowest ability students' achievements in science and math	16	3.50	2.83
Science curriculum alignment with our state's science curriculum standards	25	2.88	.93
Teaching of math that reaches all students	24	2.54	.88
Teachers' use of hands-on, inquiry-based science instruction	25	2.76	.78
Adequate time and support for teachers' ongoing professional development	25	2.40	.96
Enrollment of all students in high quality, rigorous programs	23	1.91	.90

Indicators	N	Mean	SD
Provision of professional development that focuses on program and student needs	24	2.88	.68
Use of technology to support science and math education	24	2.29	1.00
Students', teachers', and community members' shared understanding of expected student outcomes in science and math	25	2.20	.76
Community business and industry support for math and science education programs	24	1.92	.93
Number of elementary students engaged in challenging, high quality science and math learning experiences	25	2.52	.96
Percentage of students taking Advanced Placement college examinations	21	1.67	.80
High school enrollment in math and science courses	21	2.00	.71
Minority students' scores on science and math standardized tests	20	1.85	1.76
Middle ability students' achievements in science and math	24	2.42	2.12
Alignment of math assessments with standards	26	3.58	1.81
Implementation of standards-based science curriculum in classrooms	26	3.27	1.46
Changing math activities to improve curriculum	25	3.52	2.24
Emphasis on strengthening math, science, and technology	26	3.31	1.44
Financial and administrative support for ongoing professional development of teachers	26	3.04	1.48
Procedures for developing and modifying curriculum and instructional objectives	26	2.92	1.47
Allocation of local funds to support science and math education	26	2.58	1.63
Students' computer use in the classroom	26	2.88	2.05
Teacher-to-student ratio in science and math classes	25	2.04	2.23
Community support for math and science education programs	26	2.73	2.46
Relevant stakeholders' embrace of goals for improving	26	2.85	1.95

Indicators	N	Mean	SD
achievement of all students			
Number of high school students engaged in challenging, high quality science and math learning experiences	25	2.68	2.06
High school students' knowledge and skills in math and science	25	3.12	2.30
Use of multiple methods to assess students and programs	26	2.46	1.53
Highest ability students' achievements in science and math	26	2.58	1.53

Question 9—Which school in your district has had the greatest involvement with RSI?

In the three RSIs combined, schools at the elementary and middle school/junior high levels were cited as having the highest RSI involvement (48 percent, Table 19). Elementary schools had a slightly higher involvement in UCAN and ARSI, while there was a higher involvement at the middle school/junior high level in Delta. In all three RSIs a lower percentage of high schools (36 percent) were listed as the most involved schools. These data correlate with those from Question 1, which show a higher percentage of elementary and middle school/junior high schools involved in each RSI than at the high school level.

Table 19. Grade Level of the School with Highest RSI Involvement in Each District

	Number of Schools			Percentage at Each Level		
RSI	Elementary	MS/JH	HS	Elementary	MS/JH	HS
Delta	8	10	6	44%	56%	33%
UCAN	14	13	11	54%	50%	42%
ARSI	10	9	7	44%	39%	30%
Combined	32	32	24	48%	48%	36%

Note: Percentages at each level were calculated as percentage of respondents in each RSI listing a school at that level. Many districts listed schools at more than one level; therefore, the percentages do not equal 100 percent.

Question 10—What have been the most important factors contributing to this school's involvement with the RSI?

At the schools in the district with the highest RSI participation, the most important factors

contributing to involvement were support by the administration, direct contact, interest, professional development, and resources (see Table 20).

Different factors were most often cited as important by districts in each of the three RSIs. Support and interest by the school's principal or district were cited as important to high RSI involvement by 28 percent of the respondents, but was particularly important in ARSI schools (39 percent). Direct contact by a colleague in the school, particularly a Teacher Partner, was listed as important to high RSI involvement by 70 percent of the ARSI districts, as well as several other districts. Teacher interest and willingness to participate, as well as a positive attitude toward reform, were cited as important to RSI involvement by respondents in all three RSIs (22 percent), but were cited as important in almost a third of UCAN districts. The same number of UCAN districts also listed teacher professional development as important to RSI involvement. Respondents particularly mentioned professional development that was appropriate for the individual and the grade level. Resources such as money, RSI staff, consultant services, and materials were cited as contributing to high RSI involvement in 16 percent of the districts. Other factors cited by at least two districts were perceived need, team effort, teacher stability, networking, and collaboration among schools and family involvement.

Table 20: Factors Important to High RSI Involvement

	Number of Districts			Percentage of Districts			
Factor	Delta	UCAN	ARSI	Delta	UCAN	ARSI	Overall
Administration support	5	5	9	28%	19%	39%	28%
Direct contact	0	2	16	0%	8%	70%	27%
Teacher interest	3	8	4	17%	31%	17%	22%
Professional development	3	8	2	17%	31%	9%	19%
Resources	4	5	2	22%	19%	9%	16%

Question 11—What are the most significant changes in this school [school most involved in the RSI] as a result of RSI involvement?

In all three RSIs, respondents reported that improved instruction was the most significant change (49 percent) that resulted from RSI involvement (Table 21). These instructional changes included more use of inquiry, hands-on activities, and activity-based instruction as well as changes in assessment practices. Curriculum changes were also cited as important (24 percent) by respondents in each RSI. These changes included curriculum alignment to standards, implementation of a math/science program, and a greater use of math/science equipment and kits. Increased communication and involvement were listed as significant changes by 21 percent

of the respondents. This included increased family participation, community awareness of math/science, and communication with the community, as well as increased teacher collaboration and networking with other schools. Training and education for school staff were listed as important changes by 19 percent of the respondents. Support for professional development increased, as did the quality of the programs. Several districts in each RSI reported improved student achievement as a significant change in those schools most involved with the RSI (10 percent).

Table 21: Areas of Significant Change in School with Greatest RSI Involvement

	Number of Districts			Percentage of Districts			
Area of Change	Delta	UCAN	ARSI	Delta	UCAN	ARSI	Overall
Improved instruction	7	11	15	39%	42%	65%	49%
Curriculum changes	3	4	9	17%	15%	39%	24%
Increased communication and involvement	4	5	5	22%	19%	22%	21%
Training and education	4	6	3	22%	23%	13%	19%
Increased focus on math/science	1	4	6	6%	15%	26%	16%
Improved student achievement	3	2	2	17%	8%	9%	10%

Question 12—Which RSI activities or services have contributed most to these changes [in the school most involved with the RSI]?

RSI activities or services that were reported as having contributed most to changes in schools with high RSI involvement included professional development, RSI staff and consultants, curriculum-oriented activities, and resources (see Table 22).

Respondents overwhelmingly (58 percent) cited professional development and training as the RSI activity or service that contributed most to the changes in schools with the highest RSI involvement (see Table 22). This included professional development activities for teachers, Leadership Institutes, team training, and professional development for principals. Having a Teacher Partner in the school was listed by 65 percent of the ARSI districts as contributing to the highest level of school involvement. Since the Teacher Partners both received and delivered professional development, they can be included in the professional development category. If one analyzes the responses in this way, 87 percent of the ARSI districts listed professional

development as important to school changes, and 67 percent of the overall responses can be grouped in this category.

Several other RSI activities and services were also cited as contributing to significant changes in the most involved schools. RSI staff and consultants were listed by 15 percent of the respondents, but were seen as most helpful in ARSI (22 percent). Curriculum-oriented activities (13 percent) included needs assessments; program reviews; curriculum changes; and curriculum development, selection, and alignment. Resources cited as contributing to changes included funding to purchase equipment and materials, funding and grants in general, and curriculum materials. Collaboration and teamwork were listed as contributing to change in 10 percent of districts and included collaboration and networking with other districts, the resource collaborative and the UCAN team.

Table 22: RSI activities or services contributing most to significant changes in schools with greatest RSI involvement

	Number of Districts			Percentage of Districts			
Activity or Service	Delta	UCAN	ARSI	Delta	UCAN	ARSI	Overall
Professional development and training	9	16	14	50%	62%	61%	58%
Teacher Partner	0	0	15	0%	0%	65%	.
RSI staff and consultants	1	4	5	6%	15%	22%	15%
Curriculum-oriented	2	3	4	11%	12%	17%	13%
Resources	2	2	4	11%	8%	17%	12%
Collaboration and teamwork	1	2	4	6%	8%	17%	10%

Question 13—Which school in your district has had the least involvement with the RSI?

While elementary schools were listed as having among the highest RSI involvement (see Question 9 and Table 19), they were also the level most frequently listed as having the lowest involvement overall (36 percent, Table 23). The responses from UCAN lower the combined mean. This probably has something to do with the large number of schools widely dispersed over a four state area and the resources available to involve all the schools. In the individual RSIs, elementary schools were listed as having the lowest involvement in Delta and ARSI, while high schools were more frequently listed in UCAN.

Table 23: Schools at Each Educational Level Having the Least RSI Involvement

	Number of Schools			Percentage at Each Level		
RSI	Elementary	MS/JH	HS	Elementary	MS/JH	HS
DELTA	9	2	7	50%	11%	39%
UCAN	6	5	9	23%	19%	35%
ARSI	9	2	6	39%	9%	26%
Combined	24	9	22	36%	13%	33%

Note: Percentages at each level were calculated as percentage of respondents in each RSI listing a school at that level. Many districts listed schools at more than one level; therefore, the percentages do not always equal 100 percent.

Question 14—What factors have contributed to this school's [school least involved in the RSI] lower involvement with the RSI?

Factors most often cited as contributing to lower RSI involvement included lack of interest or support, lack of emphasis at that level or school, and lack of time (see Table 24).

In all three RSIs, lack of interest or support was cited most frequently (30 percent) as the factor contributing to lower participation by the school(s) least involved in the RSI. Lack of teacher interest and lack of administrative support were the most frequently listed items in this category. Other factors included teachers resisting change, teachers teaching out of content area, lack of parental involvement, Teacher Partner not allowed to leave the school for meetings, no school representative on the RSI Leadership Team, and lack of coordination between the RSI and the school district.

The next most frequently cited reason for low involvement was a lack of emphasis at that school's level or at that school (16 percent). Other factors were that no Teacher Partner was assigned at this level and a decision that this school needed less support.

A lack of time was cited by 12 percent of the respondents overall, but was listed by 23 percent of the UCAN districts as a factor leading to lower involvement. This category included factors listed as less staff at the school, teachers tied up with after-school activities, and staff with multiple responsibilities.

Although the districts in the three RSIs are located in rural areas, only 8 percent of the respondents listed geographic distance or isolation as a factor leading to lower RSI involvement.

Table 24: Factors Contributing to Lower Involvement in Schools Least Involved with the RSI

	Number of Districts			Percentage of Districts			
Factor	Delta	UCAN	ARSI	Delta	UCAN	ARSI	Overall
Lack of interest/support	5	9	6	28%	35%	26%	30%
Decreased emphasis at level	4	0	7	22%	0%	30%	16%
Lack of time	1	6	1	6%	23%	4%	12%
Geographic distance	2	2	1	11%	8%	4%	8%

Summary

Elementary schools have the highest level of participation in the RSI. This finding was corroborated through case studies that were conducted as part of the overall study.

Examination of the data suggests that there are two different strategies employed by RSIs for providing services to school districts. ARSI apparently tried to provide a very broad menu of services to everyone. UCAN and Delta RSIs appear to provide core services, such as group/individual professional development and on-site consultation, to everyone and supplement with other services, perhaps tailored to the needs of individual districts.

Professional development, particularly for teachers, was an important part of all three RSI projects. It was listed as the most effective RSI activity, as the greatest benefit districts gained from RSI participation, and as the RSI activity that contributed most to significant changes in schools with the greatest RSI involvement.

Curriculum-related activities were also reported to be among the most effective RSI activities. Curriculum changes as a result of these activities were seen as a great benefit in UCAN and ARSI. However, only in ARSI were curriculum changes perceived to be among the most significant changes in the schools with high RSI involvement. Professional development was cited as an important activity that led to curriculum changes.

A factor that facilitated education reform across all three RSIs was administrative support in the form of school boards, district administration, and school principals. Another factor that facilitated education reform was state education standards. The factors that were found to be barriers to education reform were money, lab equipment, and expectations for students.

Respondents said RSI participation most influenced math assessment alignment with standards (mean=3.12); emphasis on strengthening science, math, and technology (3.08); and curriculum implementation (3.04). RSI least influenced teacher/student ratios (mean=1.43); minority test scores (1.47); and the percentage of students taking advanced placement courses.

Resources such as equipment/materials, consultants, and funding were another benefit of RSI involvement. They were listed as some of the most effective services by Delta and ARSI districts. Professional development was an important component of learning to use new equipment and materials.

RSI activities that led to school staff going beyond the confines of their buildings were also listed as a benefit of UCAN and ARSI involvement. These activities led to increased communication with schools outside the district and with the community, as well as increased family involvement in the school. Delta and ARSI districts also listed these activities as among the most effective ones.

While most RSI activities were not directed toward administrators, administrative support was important for high RSI involvement in Delta and ARSI. Direct contact by Teacher Partners was very effective in increasing school involvement in ARSI. In UCAN, teacher interest and professional development activities were cited as factors leading to high RSI involvement.

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